ORDER NO. HAD8703043C8

# Service Manual

Turntable System

## SL-J90

DC Servo
Automatic Turntable System

**Color**

(K) ..... Black Type

| Color | Areas |
|---|---|
| (K) | [E] ..... Switzerland and Scandinavia. |
| (K) | [EK] .... United Kingdom. |
| (K) | [XL] .... Australia. |
| (K) | [EG] ... F.R. Germany. |
| (K) | [EB] .... Belgium. |
| (K) | [EH] .... Holland. |
| (K) | [EF] .... France. |
| (K) | [Ei] ..... Italy. |
| (K) | [EC] .... Czechoslovakia. |
| (K) | [XA] .... Asia, Latin America, Middle Near East, Africa and Oceania. |

## SPECIFICATIONS

### ■ TURNTABLE SECTION

**Type:** Automatic turntable
**Drive method:** Belt drive
**Motor:** DC motor
**Drive control method:** DC servo control
**Turntable platter:** Aluminum die-cast
Diameter 300 mm (12")
**Turntable speeds:** 33-1/3 rpm and 45 rpm
**Wow and flutter:** 0.045% WRMS ±0.06% weighted zero to peak (IEC 98A weighted)
**Rumble:** 70 dB DIN-B (IEC 98A weighted)

### ■ TONEARM SECTION

**Type:** Static-balanced, straight tonearm
Plug-in-connector cartridge system
**Overhang:** 25 mm (1")
**Effective length:** 200 mm (7-7/8")
**Tracking error angle:** Within 3°18' at inner groove of 30 cm (12") disc
Within 0°36' at outer groove of 30 cm (12") disc
**Applicable cartridge weight:** 6 g

### ■ CARTRIDGE SECTION

**Type:** Moving magnet stereo cartridge
**Magnet circuit:** All laminated core
**Frequency response:** 10 Hz—30 kHz
**Output voltage:** 2.5 mV at 1 kHz, 5 cm/s. zero to peak lateral velocity
(7 mV at 1 kHz, 10 cm/s. zero to peak, 45° velocity DIN 45 500)
**Channel separation:** 22 dB at 1 kHz
**Channel balance:** Within 2 dB at 1 kHz
**Recommended load impedance:** 47 kΩ—100 kΩ
**Compliance (dynamic):** $12\times10^{-6}$ cm/dyne (100 Hz)
**Stylus pressure range:** 1.25 ±0.25 g
**Weight:** 6 g (cartridge only)
**Replacement stylus:** EPS-24CS

### ■ GENERAL

**Power supply:** For Continental Europe:
AC 220V, 50Hz
For United Kingdom and Australia: AC 240V, 50Hz
For others:
AC 110~127/220~240V, 50/60Hz
**Power consumption:** 3 W
**Dimensions (W×H×D):** 360×83×320 mm
(14-1/4"×3-1/4"×12-1/2")
When dust cover is open.
360×380×320 mm
(14-1/3"×14-31/32"×12-1/2")
**Weight:** 2.5 kg (5.5 lb)

Specifications are subject to change without notice for further improvement.
Weight and dimensions shown are approximate.

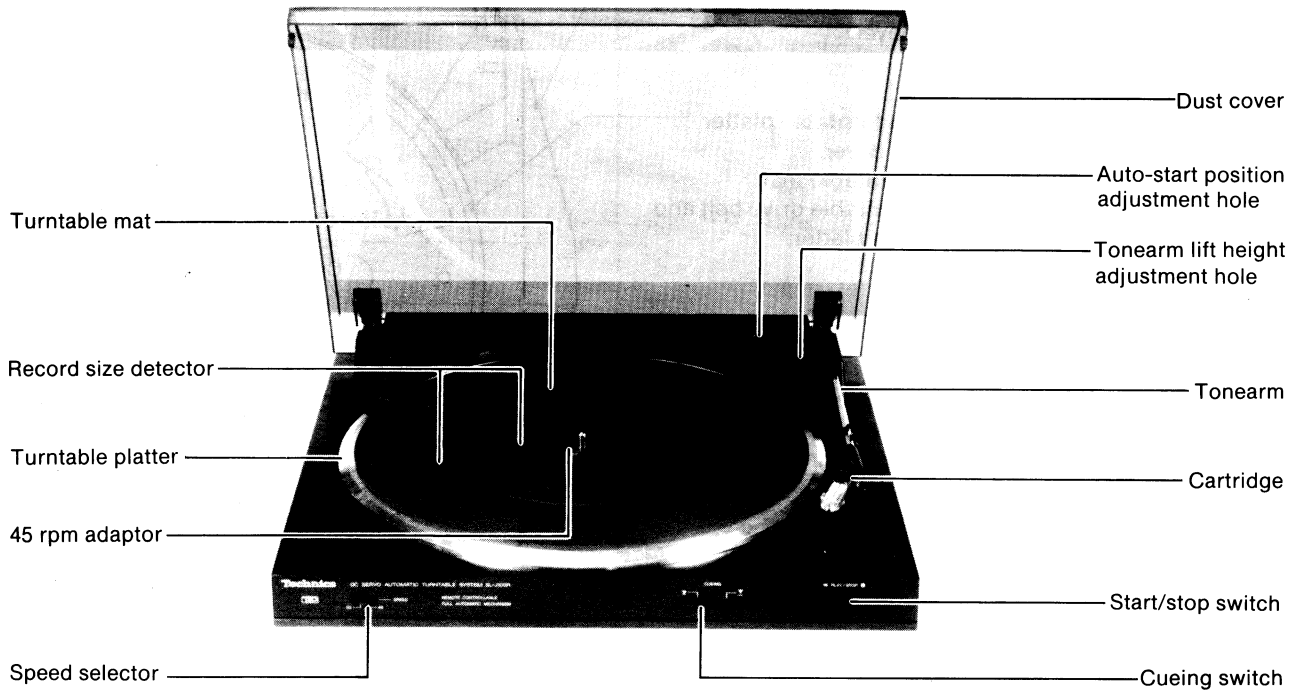
Technics

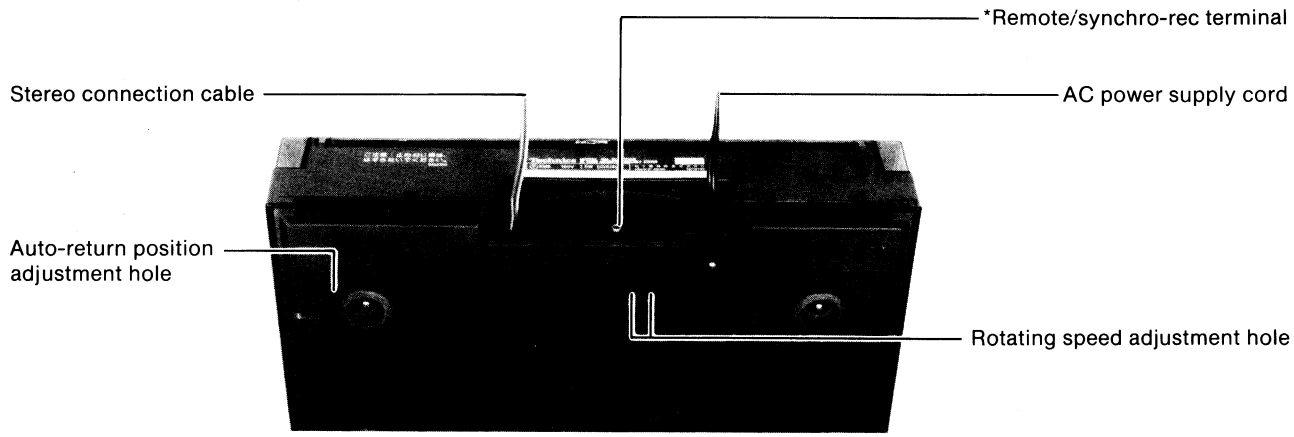
**Matsushita Electric Trading Co., Ltd.**
P.O. Box 288, Central Osaka Japan

# ■ CONTENTS


| | Page |
|---|---|
| LOCATION OF CONTROLS | 2 |
| DISASSEMBLY INSTRUCTIONS | 3 |
| REPLACEMENT PARTS LIST | 6 |
| EXPLODED VIEWS | 7 |
| SCHEMATIC DIAGRAM | 9 |
| CIRCUIT BOARDS AND WIRING CONNECTION DIAGRAM | 10 |
| MEASUREMENTS AND ADJUSTMENTS | 11 |
| PACKING | 12 |


# ■ LOCATION OF CONTROLS



# ■ DISASSEMBLY INSTRUCTIONS

| Ref. No. 1 | How to remove the upper side parts |
|---|---|
| Procedure 1 | |

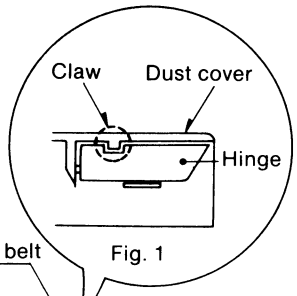


Fig. 1

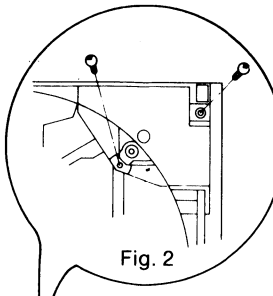
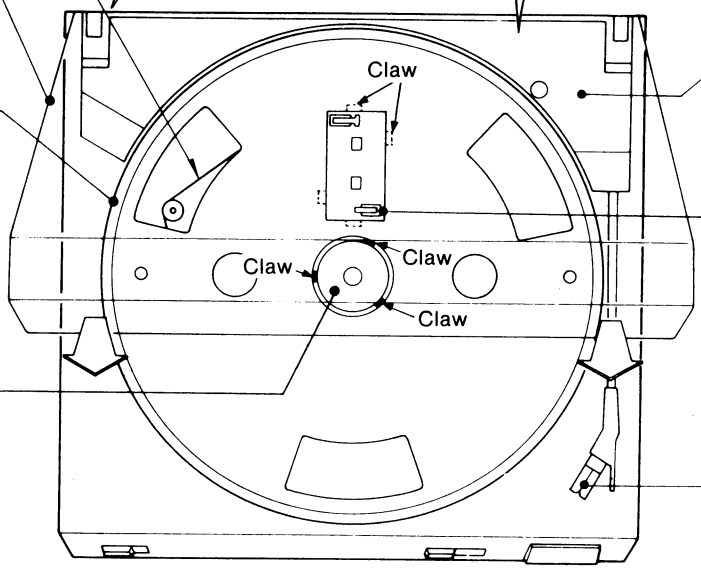


Fig. 2

**① To remove the dust cover**
1. Open the dust cover.
2. Hold the hinge shown in Fig. 1 and lift the dust cover.

**② To remove the turntable platter**
1. Open the dust cover.
2. Remove the turntable mat.
3. Remove the turntable drive belt and lift the turntable platter.

**③ To remove the 45 rpm adaptor**
1. Remove the turntable platter.
2. Turn the 45 rpm adaptor counter-clockwise.
3. Release the 3 claws.

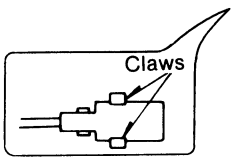


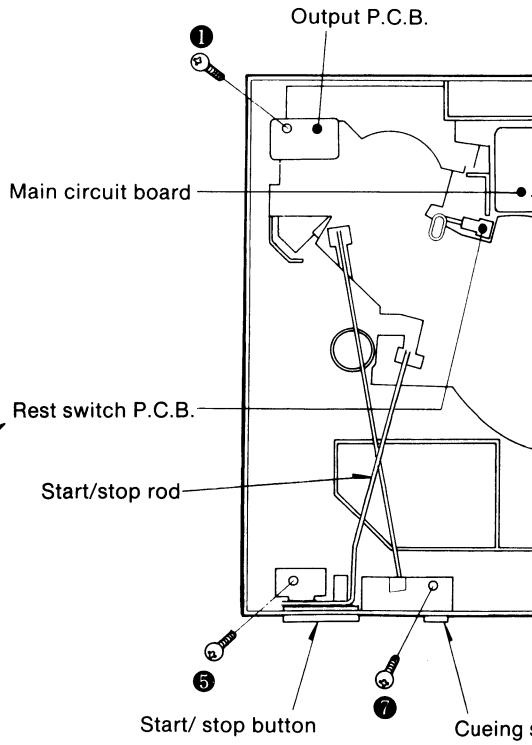

| Ref. No. 3 | How to remove the lower side parts |
|---|---|
| Procedure 2 ➧ 3 | |

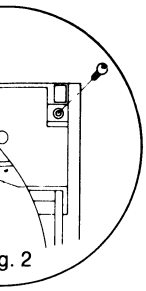
**To remove the main circuit board**
1. Set the speed selector to 33 rpm.
2. Remove the screw ❷.

**To remove the output P.C.B.**
- Remove the screw ❶.

**To remove the rest switch P.C.B.**
1. Release the 2 claws on both sides.
2. Pull out the rest switch P.C.B.






**④ To remove the tonearm cover**

1. Remove the dust cover and turntable platter.
2. Remove the 2 screws shown in Fig. 2.
3. Lift the tonearm cover.

**⑤ To remove the record size detector**

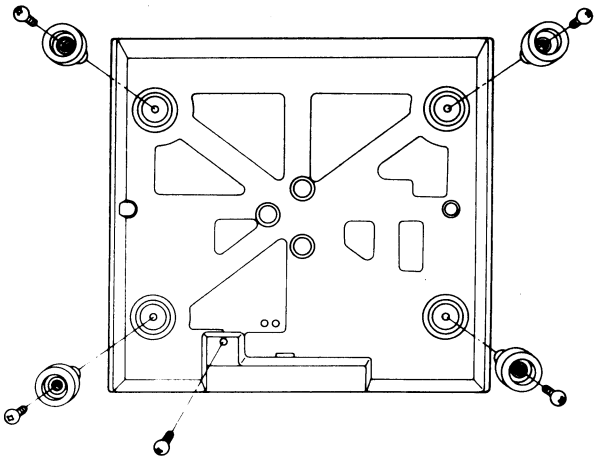
1. Remove the turntable platter.
2. Release the 2 claws.

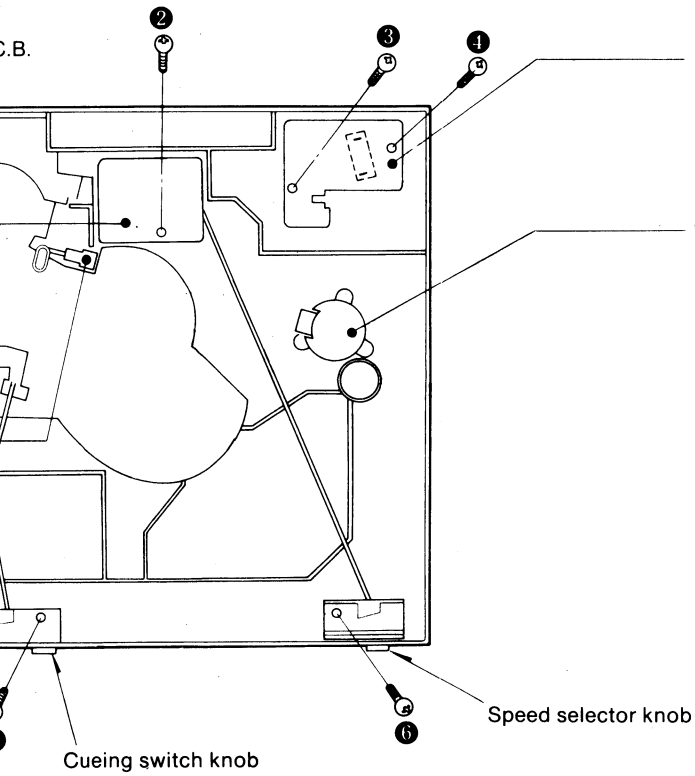
**⑥ To remove the cartridge**

- Remove the cartridge setscrew and pull out the cartridge.

| Ref. No. 2 | How to remove the bottom board |
|---|---|
| Procedure 1-② ➧ 2 | |

1. Remove the turntable platter.
2. Clamp the tonearm.
3. Turn over the unit on a soft cloth.
4. Remove the 5 screws.






**To remove the power transformer**

- Remove the 2 screws (❸, ❹), and lift the power transformer.

**To remove the turntable drive motor**

1. Unsolder the 4 lead wires.
2. Lift the turntable drive motor.

**To remove the speed selector knob**

1. Remove the screw ❻.
2. Remove the rod.

**To remove the cueing switch knob**

1. Remove the screw ❼.
2. Remove the rod.

**To remove the start/stop button**

1. Remove the screw ❺.
2. Remove the rod.

| Ref. No. 4 | How to remove the tonearm unit |
|---|---|
| Procedure 2 ▸ 4 | |

1. Unsolder the 5 arm leads from the output P.C.B. (Fig. 1)
2. Turn over the unit (top side up), and then remove the dust cover and the tonearm cover.
3. Remove the 2 screws shown in Fig. 2.
4. Release the tonearm clamper and move the tonearm toward the center.
5. Lift the tonearm unit.

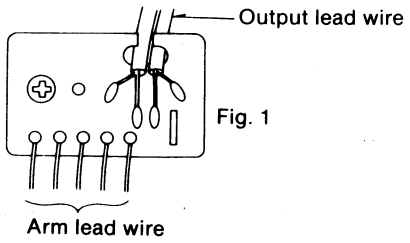


Fig. 1

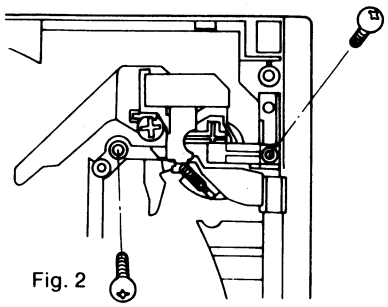


Fig. 2

| Ref. No. 5 | How to remove the cueing selector |
|---|---|
| Procedure 4 ▸ 5 | |

1. Remove the spring.
2. Pull out the rod from the cueing unit.
3. Remove the index plate.
4. Remove the 2 screws.
5. Lift the cueing unit.

* The liftarm can be replaced without removing the cueing unit in the procedure shown in Fig. 2.

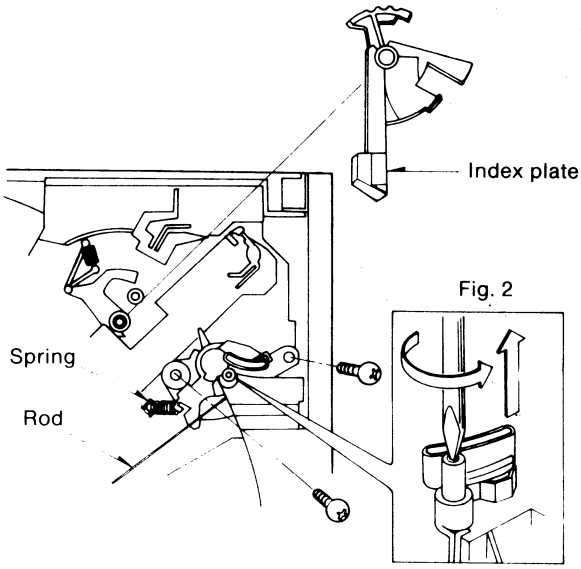


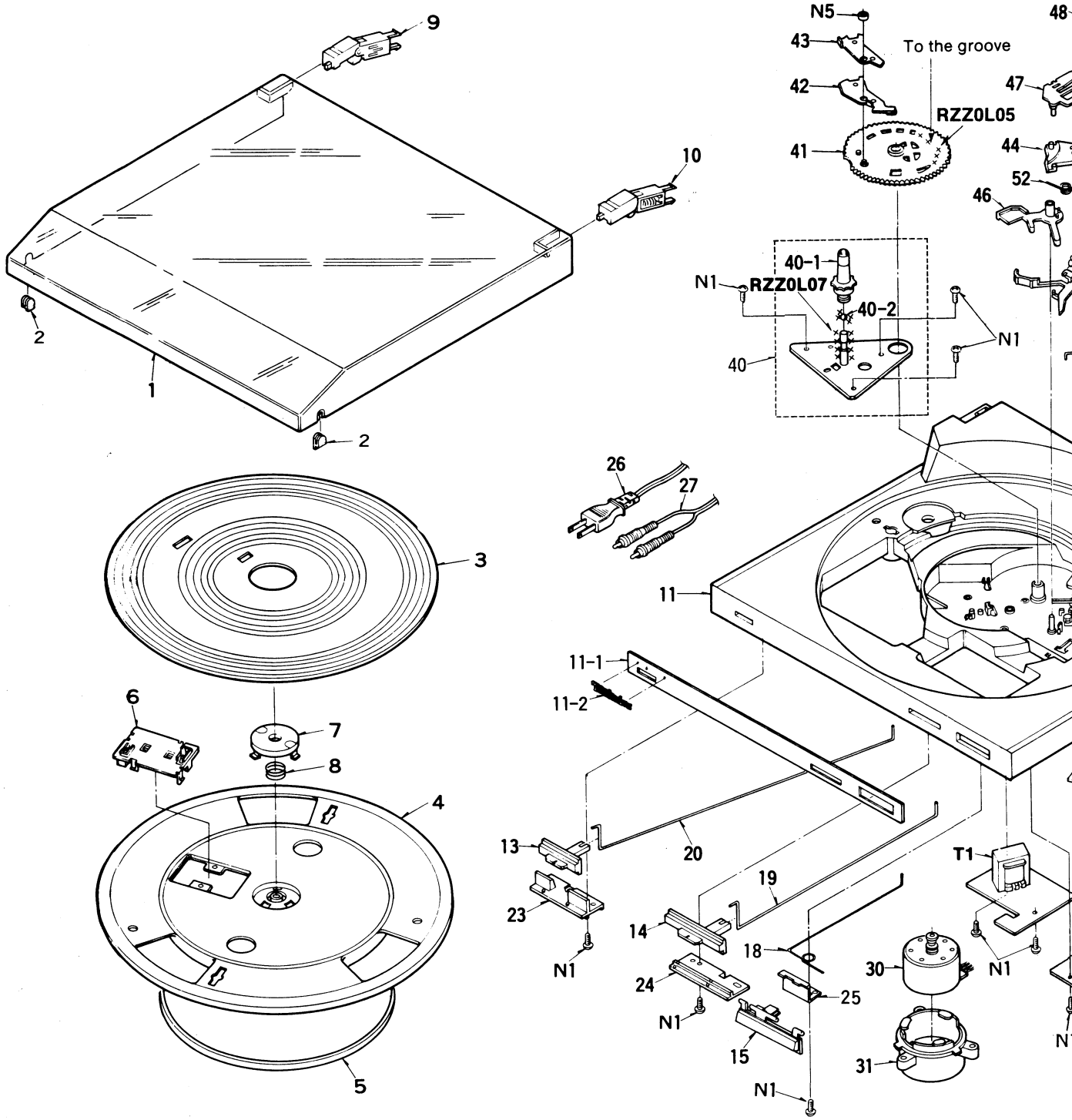
Fig. 2

# ■ REPLACEMENT PARTS LIST

**Notes:** * Important safety notice:
Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.
* Bracketed indications in Ref. No. columns specify the area.
Parts without these indications can be used for all areas.

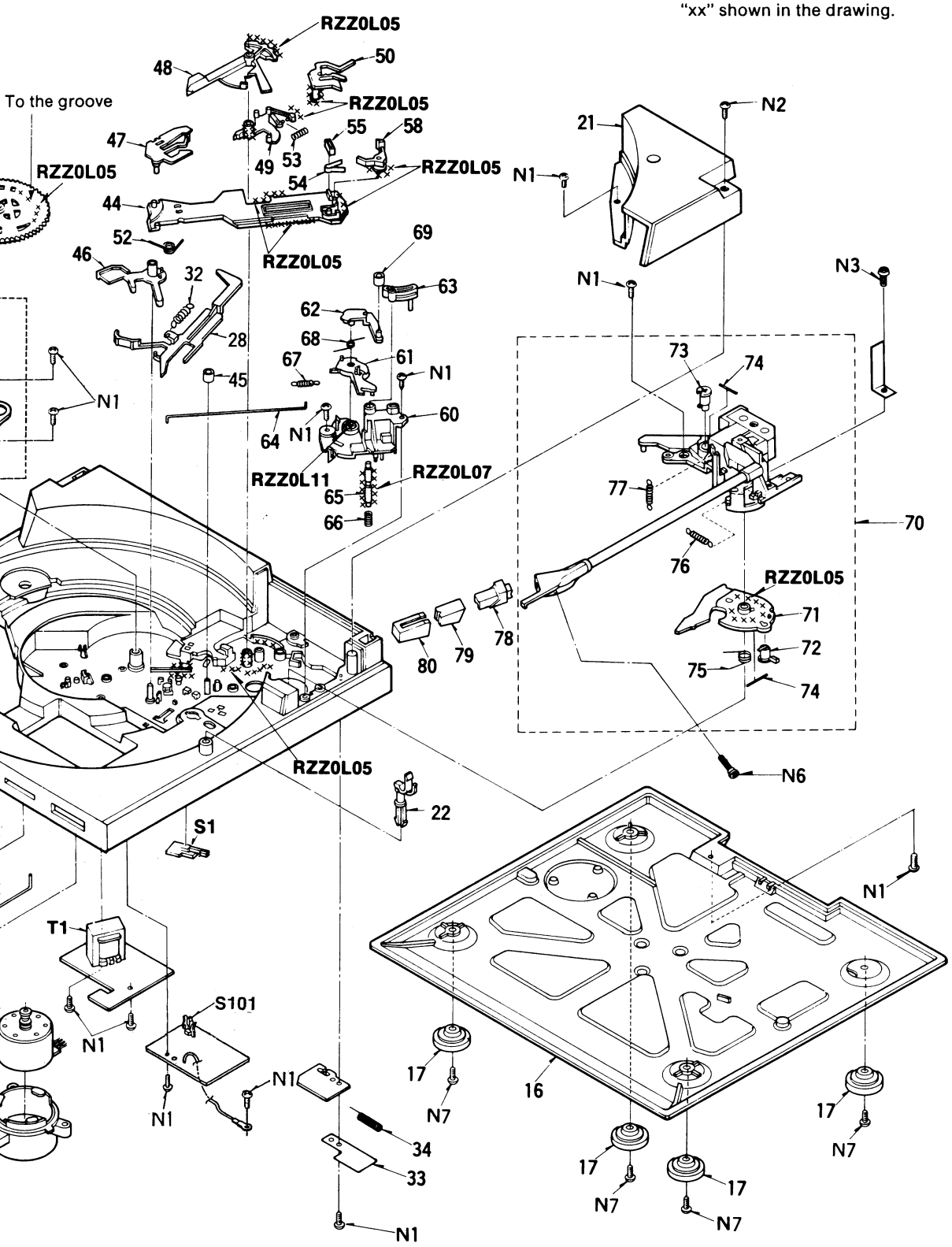
| Ref. No. | Part No. | Part Code | Description |
|---|---|---|---|
| **DIODES** | | | |
| D1, D2 ⚠ | SVDERA15-04T | 001 032 9312 5 | RECTIFIER |
| D3, D4 ⚠ | SVDERA15-04T | 001 032 9312 5 | RECTIFIER |
| **VARIABLE RESISTORS** | | | |
| VR101, VR102 | EVN61AA00B52 | 001 180 2028 7 | V.R., 500Ω(B) |
| **RESISTORS** | | | |
| R101, R102 | ERDS2TJ471 | 001 152 2361 5 | CARBON, 470Ω, 1/4W |
| **CAPASITORS** | | | |
| C1 ⚠ | ECQG1223KZ | 001 106 4822 9 | POLYESTER, 0.022μF, 100V |
| C2, C3 ⚠ | ECKD1H223PF | 001 103 1510 9 | CERAMIC, 0.022μF, 50V |
| C4 | ECEA1CU331 | 001 120 3200 5 | ELECTROLYTIC, 330μF, 16V |
| **COILS AND TRANSFORMERS** | | | |
| T1 ⚠ (EK, XL) | SLTB35F33K | 001 202 7969 2 | POWER TRANSFORMER |
| T1 ⚠ (E, EG, EB, EF) (EH, EI, EC) | SLTB35F34K | 001 202 7970 9 | POWER TRANSFORMER |
| T1 ⚠ (XA) | SLTB35F35K | 001 202 7971 8 | POWER TRANSFORMER |
| **FUSES** | | | |
| F1 ⚠ (XA) | XBA2C005TB0 | 002 380 1438 5 | 250V, T50mA |
| **SWITCHES** | | | |
| S1 ⚠ | SSPB4-1 | 003 434 1040 8 | SW, REST |
| S2 ⚠ (XA) | SFDSHXW02067 | 003 435 5801 0 | SW, VOLTAGE SELECT |
| S101 | SSP83 | 003 434 0996 9 | SW, SPEED |
| **CABINET AND CHASSIS** | | | |
| 1 | SGDB90E | 016 802 2160 4 | DUST COVER |
| 1-1 | SHGB5 | 016 653 1018 2 | CUSHION RUBBER |
| 3 | SFTGN05N01 | 017 827 0277 5 | TURNTABLE MAT |
| 4 | SD0B3-1 | 016 766 0212 8 | TURNTABLE |
| 5 | SJY90080-1 | 016 754 0008 6 | BELT |
| 6 | SFUMN05N04E | 017 630 0449 6 | SIZE DETECTING PLATE |
| 7 | SFWEN05N01 | 017 918 0147 8 | 45RPM ADAPTOR |
| 8 | SFQAN05N01 | 017 726 0395 2 | SPRING |
| 9 | SBHB4E | 016 824 0319 5 | HINGE |
| 10 | SBHB5E | 016 824 0320 2 | HINGE |
| 11 (E, EC) | SKMLJ90-KE | 016 800 3119 1 | CABINET |
| 11 (EB, EH, EF) (EI) | SKMLJ90-KEB | 016 800 3115 5 | CABINET |
| 11 (EG) | SKMLJ90-KEG | 016 800 3118 2 | CABINET |
| 11 (EK) | SKMLJ90-KEK | 016 800 3120 8 | CABINET |
| 11 (XA) | SKMLJ90-KXA | 016 800 3116 4 | CABINET |
| 11 (XL) | SKMLJ90-KXL | 016 800 3117 3 | CABINET |
| 11-1 | SGXB370-1 | 016 846 3821 2 | ORNAMENT |
| 11-2 | SGB628-1 | 016 863 0280 4 | BADGE |
| 13 | SBCB280-0K | 016 702 6918 3 | KNOB, SPEED SELECT |
| 14 | SBCB270-0K | 016 702 6919 2 | KNOB, CUEING |
| 15 | SBCB260-0K | 016 702 6920 9 | BUTTON, START/STOP |
| 16 | SKUB9 | 016 802 2161 3 | BOTTOM BOARD |
| 17 | SFGAN05N01 | 017 828 0027 6 | INSULATOR |
| 18 | STZB14-1 | 016 712 0343 8 | ROD, START/STOP |
| 19 | STZB15-1 | 016 712 0340 1 | ROD, CUEING |
| 20 | STZB16-1 | 016 712 0341 0 | ROD, SPEED SELECT |
| 21 | SKMB691-0K | 016 640 0513 7 | TONEARM COVER |
| 22 | SHRB69E | 016 652 0708 2 | TONEARM REST |
| 23 | SKMB701 | 016 640 0514 6 | BRACKET |
| 24 | SKMB711 | 016 640 0515 5 | BRACKET |
| 25 | SKMB721 | 016 640 0516 4 | BRACKET |
| 26 ⚠ (EK, XL) | QFC1205M | 003 490 0928 5 | POWER CORD |
| 26 ⚠ (XA) | SJAB4 | 003 490 5277 7 | POWER CORD |
| 26 ⚠ (E, EG, EB, EF) (EH, EI, EC) | SJA138-3 | 003 490 2575 2 | POWER CORD |
| 27 | SJPB6 | 003 492 6778 7 | OUTPUT CORD |
| 28 | SHRB75 | 016 652 0694 1 | START LEVER |
| 30 | SMILJ100R-KN | 002 310 2487 4 | DRIVE MOTOR |
| 31 | SHGB1-1 | 016 653 1114 3 | RUBBER SPACER |
| 32 | SUSB45 | 016 726 0894 6 | COIL SPRING |
| 33 | SMCB5 | 016 601 0589 6 | SHIELD PLATE |
| 34 | SUSB56 | 016 726 0888 4 | SPRING |
| 40 | SUWB26E | 016 650 5304 8 | BASE ASS'Y |
| 40-1 | SDWB1A | 016 713 0352 2 | CENTER SPINDLE |
| 40-2 | SFYB-5-32 | 017 757 0305 7 | STEEL BALL |
| **MECHANISM PARTS** | | | |
| 41 | SDGB10 | 016 745 0217 0 | MAIN GEAR |
| 42 | SFURZ15R51 | 017 655 0093 7 | DRIVE LINK |
| 43 | SFURN05N52 | 017 655 0092 8 | FRICTION LINK |
| 44 | SHRB74 | 016 652 0687 0 | DRIVE PLATE |
| 45 | SHGB23 | 016 653 1169 8 | CUSHION RUBBER |
| 46 | SHRB96 | 016 652 0744 8 | DRIVE LEVER |
| 47 | SHRB71 | 016 652 0691 4 | SWITCH LEVER |
| 48 | SHRB76 | 016 652 0688 9 | INDEX PLATE |
| 49 | SHRB73-1 | 016 652 0831 0 | SUB-INDEX PLATE |
| 50 | SHRB72-1 | 016 652 0750 0 | SUB-REMOVAL PLATE |
| 52 | SUSB49 | 016 726 0890 0 | SPRING |
| 53 | SUSB28 | 016 726 0805 3 | SPRING |
| 54 | SUSB31 | 016 726 0808 0 | SPRING |
| 55 | SFGZB63M51 | 017 653 0144 3 | CUSHION RUBBER |
| 58 | SHRB83 | 016 652 0695 0 | PLATE |
| 60 | SHRPM77 | 016 652 0776 0 | CUEING BASE ASS'Y |
| 61 | SHRB81-1 | 016 652 0743 9 | CUEING CAM |
| 62 | SHRB78 | 016 652 0686 1 | BRAKE LEVER |
| 63 | SFUMN05N60-2 | 016 717 0260 5 | ARM LIFT |
| 64 | SUSB46-1 | 016 726 0920 1 | SPRING |
| 65 | SFXJN05N51 | 017 713 0166 4 | SHAFT |
| 66 | SUSB1 | 016 726 0725 2 | SPRING |
| 67 | SUSB47-1 | 016 726 0921 0 | SPRING |
| 68 | SUSB48 | 016 726 0892 8 | SPRING |
| 69 | SHGB19 | 016 653 1115 2 | RUBBER SPACER |
| **TONE ARM** | | | |
| 70 | SFAB15A | 001 271 0695 0 | TONEARM ASS'Y |
| 71 | SHRB80 | 016 652 0684 3 | PLATE |
| 72 | SHRB79 | 016 652 0685 2 | CAM |
| 73 | SFEB12 | 016 716 0042 8 | CAM |
| 74 | SUSB44 | 016 726 0896 4 | SPRING |
| 75 | SUSB54 | 016 726 0889 3 | SPRING |
| 76 | SFQHF01N06 | 017 726 0359 6 | SPRING |
| 77 | SUSB43-1 | 016 726 0902 3 | SPRING |
| 78 | EPC-P24S | | CARTRIDGE |
| 79 | EPS-24CS | 001 273 0129 5 | STYLUS |
| 80 | SFCNC05101 | 016 845 0206 6 | COVER, STYLUS |
| **SCREWS, WASHERS & NUTS** | | | |
| N1 | XTV3+10BFN | 005 501 0818 6 | SCREW |
| N2 | XTV3+10JFZ | 005 501 0833 7 | SCREW |
| N3 | XTN3+14J | 005 501 4855 5 | SCREW |
| N5 | SFUMZ15R61 | 017 643 0111 8 | WASHER |
| N6 | SFPEV0Q601 | 005 500 4982 4 | SCREW |
| N7 | XTV3+8J | 005 501 0901 2 | SCREW |

# ■ EXPLODED VIEWS



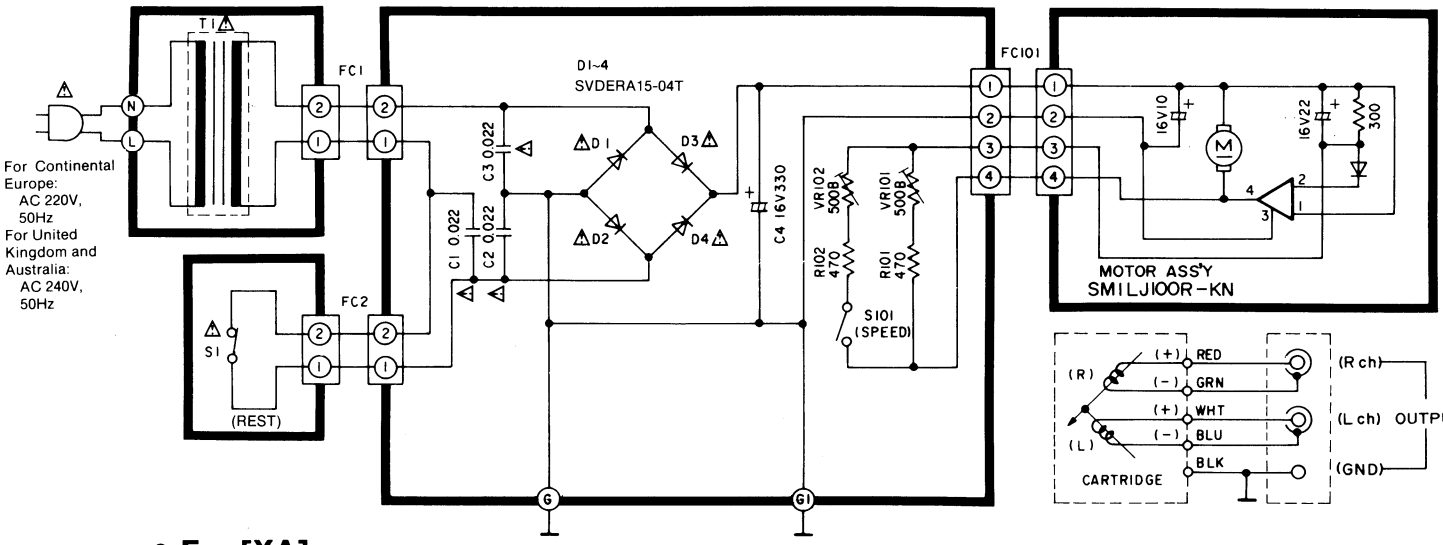

| | |
|---|---|
| 1 ~ 35 | 2 6 1 7 2 5 9 3 13 11-1 11-2 11 10 27 14 20 15 19 18 25 30 8 4 23 N1 26 24 N1 N1 N1 N5 31 N1 N1 N |
| 36 ~ 80 | 40 43 42 41 40-1 40-2 46 52 48 47 44 |

**Note:** When changing mechanism parts, apply the specified grease to the areas marked "xx" shown in the drawing.

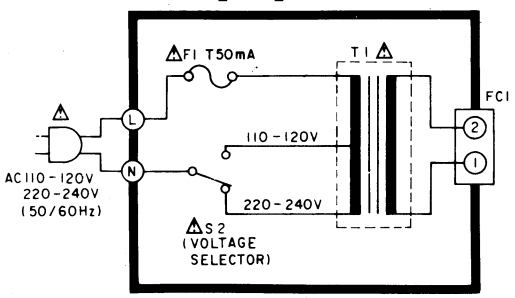



| | | |

# ■ SCHEMATIC DIAGRAM



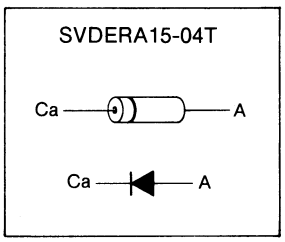

## • For [XA] area



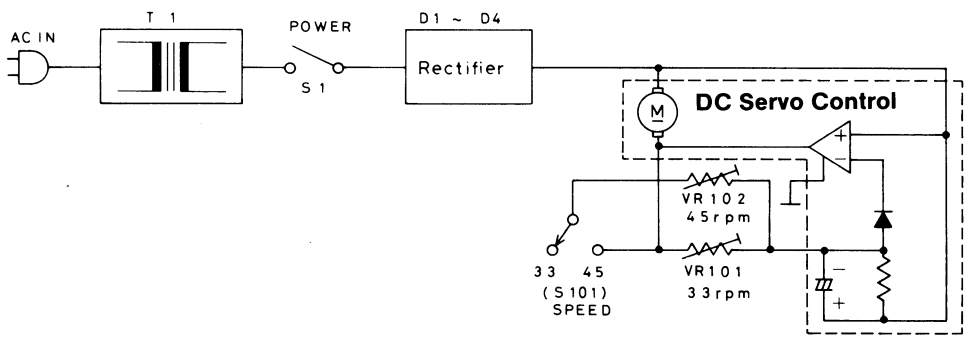

**Notes:**

1. **S1**: REST switch in "**on**" position.
2. **S101**: Speed selector switch in "**33**" position.
3. **S2**: Voltage selector switch for [XA] area.
4. The values are of the reference voltage for the turntable rotation of this unit, measured by a DC voltmeter (high impedance) on the basis of chassis. So, some error might be included depending on the internal impedance of the measuring instrument and the unit measured.
5. Important safety notice:
   Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
6. VR101 is the 33-1/3 rpm speed adjustment variable resistor.
7. VR102 is the 45 rpm speed adjustment variable resistor.
8. This schematic diagram may be modified at any time with the development of new technology.

## • Terminal guide of diode



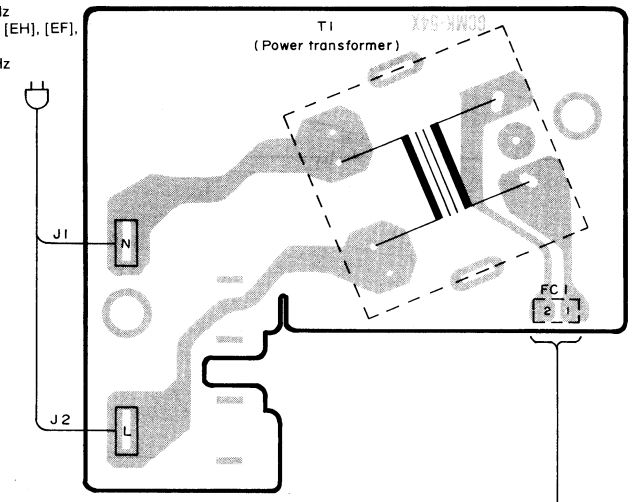

## • Block diagram



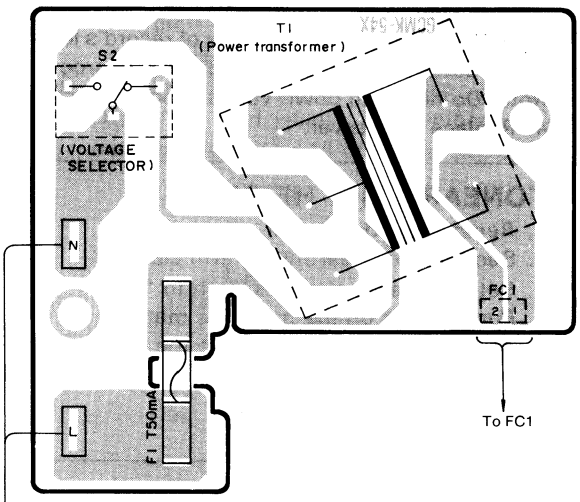
# ■ CIRCUIT BOARDS AND WIRING CONNECTION DIAGRAM

## • For [E], [EK], [XL], [EG], [EB], [EH], [EF], [Ei], and [EC] areas

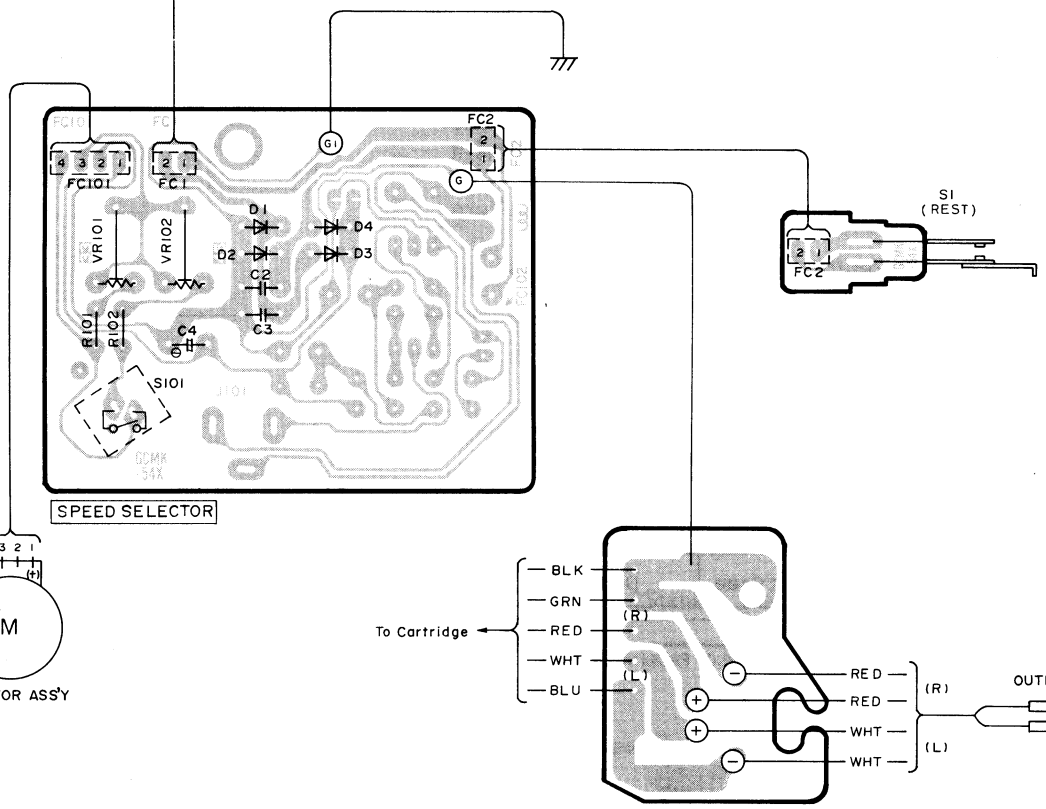
For [EK] and [XL] areas
:AC 240 V, 50 Hz
For [E], [EG], [EB], [EH], [EF], [Ei] and [EC] areas
:AC 220 V, 50 Hz




## • For [XA] area




AC 100~127/220~240 V, 50/60Hz



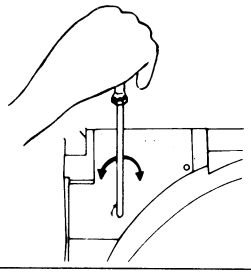
# ■ MEASUREMENTS AND ADJUSTMENTS

## AUTO-START POSITION

1. Clamp tonearm at the rest position. Lightly tap tonearm to make sure it is securely clamped in place.
2. Remove the dust cover.
3. If tonearm sets down outside of record's lead-in groove, turn clockwise (IN). If it sets down to the far inside lead-in groove, turn counterclockwise (OUT).

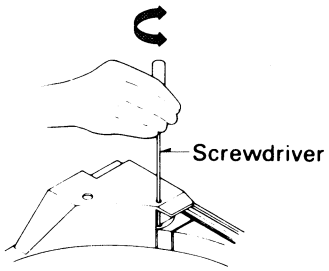
Note: Do not push down very strongly on screwdriver.

4. Replace dust cover.



## TONEARM LIFT HEIGHT

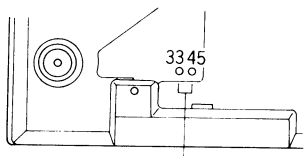
1. Remove the dust cover.
2. Secure the tonearm with arm clamper.
4. Set the cueing control switch to "▼".
5. Put a record on the turntable mat.
6. Shift the arm clamper to set the tonearm free, and adjust the gap between stylus tip and record surface to 4mm~7mm.




## ROTATING SPEED

1. Set the speed selector switch to "33".
2. Raise the unit and insert a screwdriver into the adjusting hole (33-rpm) from the back to turn VR101.
3. Set the speed selector switch to "45".
4. Same as in step 2, insert a screwdriver into the adjusting hole (45-rpm) and turn VR102.

Note: The speed adjustment should be done in 33-rpm first.



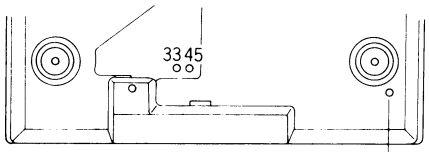

Rotating speed adjustment

## AUTO-RETURN POSITION

1. Clamp the tonearm at the rest position.
2. Raise the unit and insert a screwdriver into the adjusting hole from the back to turn the adjustment screw.

If the tonearm returns before the tune ends.....Turn clockwise.

If there is no auto-return.....Turn counterclockwise.

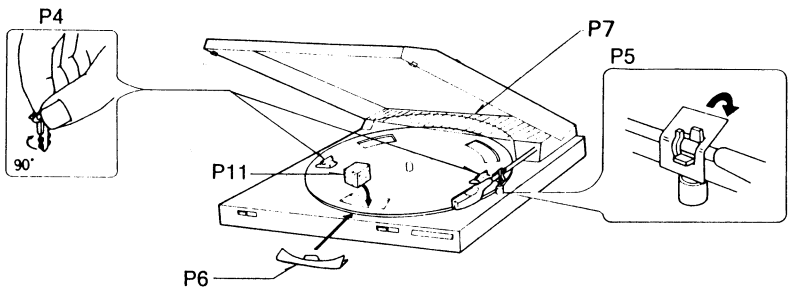


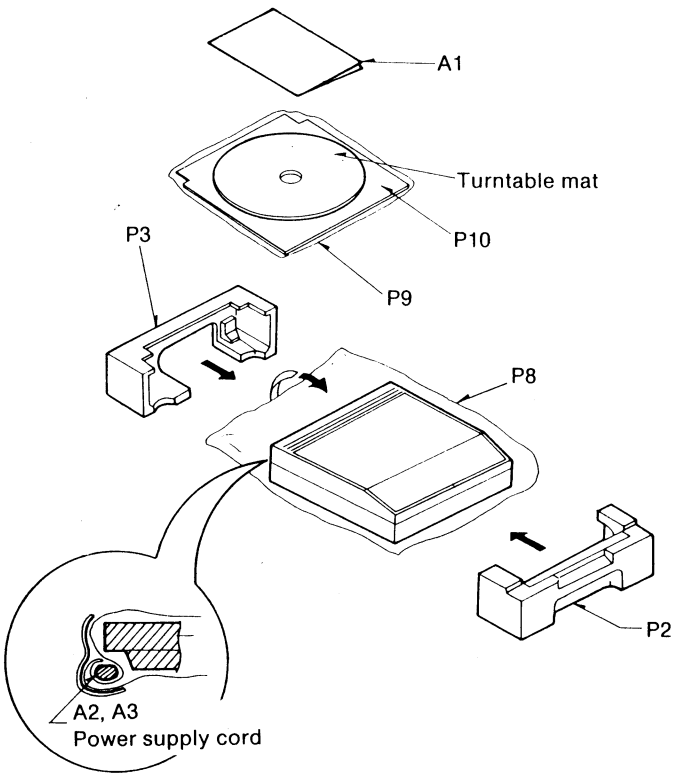

Auto-return position adjustment

# ■ REPLACEMENT PARTS LIST

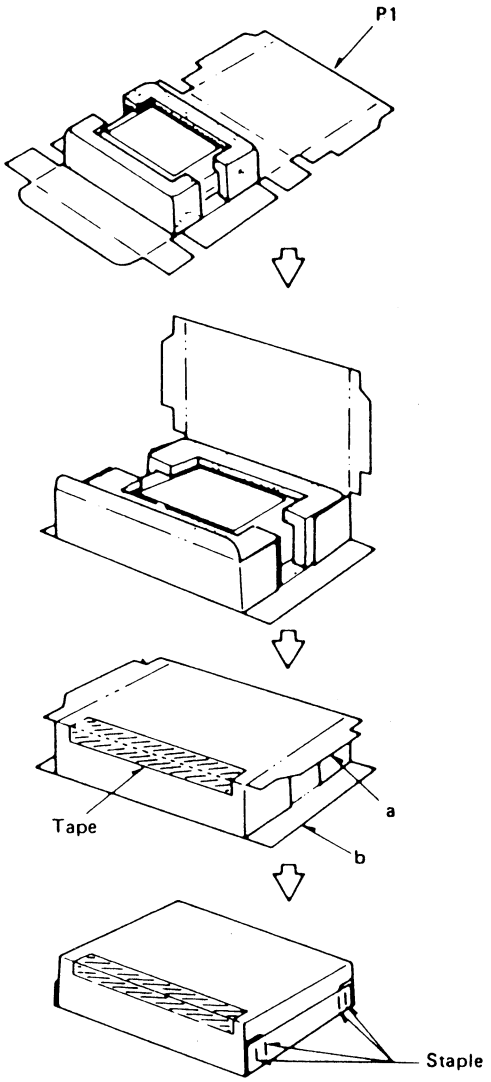
| Ref. No. | Part No. | Part Code | Description |
|---|---|---|---|
| PACKINGS | | | |
| P1 (E, EK, XL, EG) (EB, EH, EI) (EC, XA) | SPGB150 | 016 971 5061 0 | PACKING CASE |
| P1 (EF) | SPGB151 | 016 971 5101 9 | CARTON BOX |
| P2 | SPSB30 | 016 977 3212 1 | PAD |
| P3 | SPSB31 | 016 977 3213 0 | PAD |
| P4 | SFHKN05N01 | 017 645 0022 8 | CLAMPER, TURNTABLE |
| P5 | SPEB5 | 016 918 0604 2 | CLAMPER, TONEARM |
| P6 | SFHSN05N01E | 017 643 0366 7 | SPACER, DUST COVER |
| P7 | SPHB5 | 016 978 0508 5 | PROTECTION SHEET |
| P8 | SPPB4 | 016 978 0531 6 | PROTECTION COVER |
| P9 | SFYF32B35 | 017 978 0087 7 | POLYETHYLENE BAG |
| P10 | SFHDC01N01 | 017 977 0417 4 | PAD, TURNTABLE |
| P11 | SPSB29 | 016 977 3172 2 | SPACER, DUST COVER |
| ACCESSORIES | | | |
| A1 (E, EB, EH, EC) | SQXLJ90-KE | 016 983 5271 6 | INSTRUCTION MANUAL |
| A1 (EF, XA) | SQX54290 | 016 983 5270 7 | INSTRUCTION MANUAL |
| A1 (EI) | SQX54292 | 016 983 5272 5 | INSTRUCTION MANUAL |
| A1 (EK, XL) | SQX54293 | 016 983 5159 5 | INSTRUCTION MANUAL |
| A1 (EG) | SQX54294 | 016 983 5273 4 | INSTRUCTION MANUAL |
| A2 ⚠ (XA) | RJP120ZBS-H | 003 402 1437 9 | AC PLUG ADAPTOR |

# ■ PACKING

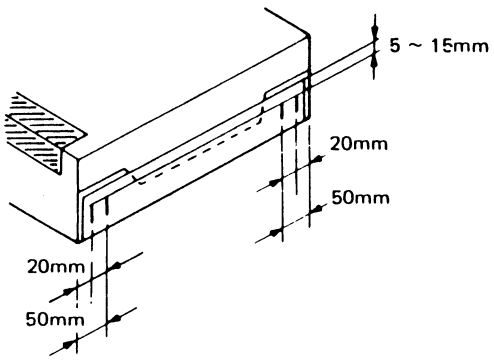



3. Place the unit (with cushions attached) as illustrated.
4. Fold the flaps according to the line marks.
5. Seal the top with adhesive tape.
   *Use gum tape or adhesive cloth tape of 50mm wide at least.
6. For the edges, first fold the flap "a" and then flap "b", and staple. Remember to staple only flap "b". (Use 15 or 16mm staple)




*Stapling positions are shown below.






Printed in Japan
870407000Ⓢ TK/HS